

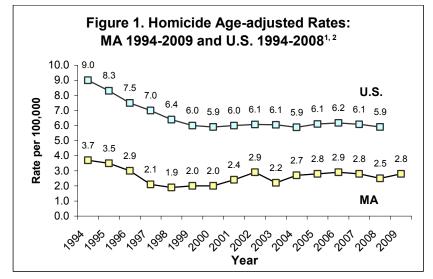
## HOMICIDES AND ASSAULT-RELATED INJURIES IN MASSACHUSETTS: 2009 DATA SUMMARY

The Injury Surveillance Program, Massachusetts Department of Public Health

Fall 2011

This bulletin provides an overview of homicide and assault-related injuries affecting Massachusetts. The first half of the bulletin presents mortality data from the Registry of Vital Records and Statistics and Hospitalization and Emergency Department data from the Massachusetts Division of Health Care Finance and Policy. The second half of the bulletin presents data from the Massachusetts Violent Death Reporting System; a system funded by the CDC and housed within the Injury Surveillance Program. Utilizing various data sources can help provide more comprehensive description of the victims of violence and the circumstances surrounding these types of injuries. A focus section on youth homicides and assault-related injuries follows this general overview.

#### HOMICIDE RATE TRENDS

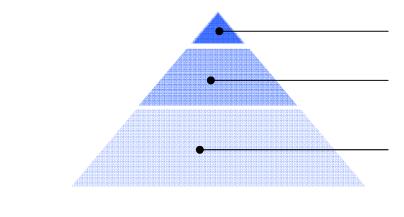


Sources: Registry of Vital Records and Statistics, MA Department of Public Health; and Web-based Injury Statistics Query and Reporting System, Centers for Disease Control and Prevention (WISQARS).

Among Massachusetts residents:

- The total number of homicides from 1994-2009 was 2,701 for an annual average of 169 homicides per year.
- The homicide rate from 1994-2009 ranged from 1.9 to 3.7/100,000 with an annual average of 2.6/100,000.
- Beginning in 1998 there was a change in trend and homicide rate increased an average of 3.6% per year from 1998 to 2009.
- The MA homicide rate has been consistently lower than that of the U.S. over the years. In 2008 (the latest data year available nationally) the homicide rate for the U.S. was 5.9/100,000, which was more than twice that of the MA rate (2.5/100,000).

Figure 2. Magnitude of Homicide and Nonfatal Assault-related Injuries Resulting in Acute Care
Hospital Stays or Emergency Department Visits, MA 2009



180

Homicides (CY2009)

2,516

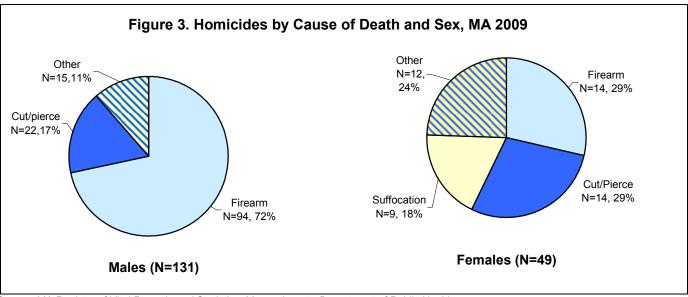
Hospital Stays for Nonfatal Assaultrelated Injuries (FY2009)

25,260

Emergency Department Visits for Nonfatal Assault-related Injuries (FY2009)

Sources: Registry of Vital Records and Statistics, MA Department of Public Health; MA Inpatient Hospital Discharge Database, MA Outpatient Observation Stay Database, and MA Emergency Department Discharge Database, MA Division of Health Care Finance and Policy.

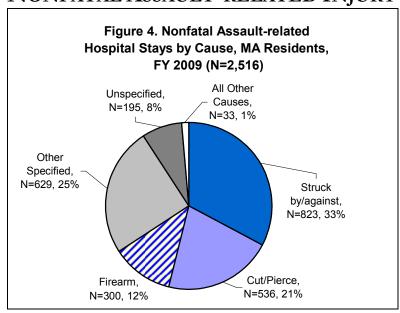
#### HOMICIDE CAUSES OF DEATH



Source: MA Registry of Vital Records and Statistics, Massachusetts Department of Public Health.

- The leading homicide causes of death were similar by sex:
  - o For males (N=94), firearm was the most common method of homicides and cut/pierce was the second most common weapon used (N=22).
  - o For females, there was an equal number (N=14) of firearm homicides and sharp injury (cut/pierce) homicides.
- Firearms as a weapon had a higher percentage among male homicides (72%) than female homicides (29%).
- Suffocation/strangulation was a cause that had a higher proportion for females (18%, N=9) compared to males (less than 1%).
- "Other" causes of death for male are drowning, fall, fire/flame, struck by/against, suffocation, other specified cause/not classifiable, and unspecified.
- "Other" causes of death for female are motor vehicle, poisoning, struck by/against, other specified cause/not classifiable, other specified cause/classifiable, and unspecified.

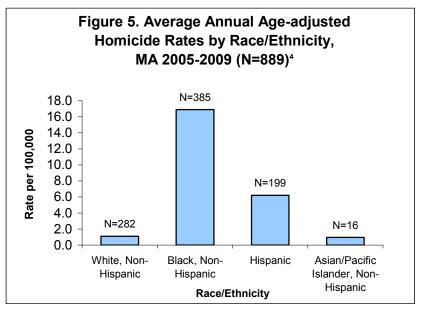
## NONFATAL ASSAULT-RELATED INJURY CAUSES



- There were a total of 2,516 nonfatal assaultrelated hospital stays among Massachusetts residents in 2009.
- The leading specified causes of nonfatal assault-related hospital stays were struck by/against (33%) and cut/pierce injuries (21%).
- Twelve percent of nonfatal assault-related hospital stays where due to firearms.
- "All other causes" includes motor vehicle injuries, falls, fire/flame, hot object, poisoning and suffocation.
- "Other specified" (25%) includes some information on the assault, but does not give a specific cause of injury.

Sources: MA Hospital Discharge Database and MA Outpatient Observation Stay Database, MA Division of Health Care Finance and Policy.

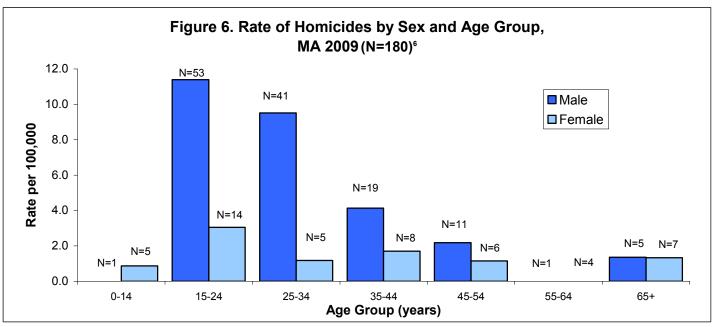
## HOMICIDE RATES BY RACE/ETHNICITY



Source: Registry of Vital Records and Statistics, Massachusetts Department of Public Health.

- There were a total of 889 homicides of Massachusetts residents from 2005-2009, for an average annual age-adjusted rate of 2.8/100,000.
- The rate for Black, non-Hispanic residents (16.9/100,000) was statistically significantly higher compared to all other races/ethnicities and was about 15 times higher than the rate of White, non-Hispanics (1.1/100,000). The proportion of the total MA population that was Black, non-Hispanic was 6% while the proportion of homicides that were Black, non-Hispanic was 55%.
- The rate for Hispanic residents (6.2/100,000,) was statistically significantly higher than White, non-Hispanics (1.1/100,000) and Asian, non-Hispanics (1.0/100,000). This was about 6 times higher than the rate for White, non-Hispanics. The proportion of the total MA population that was Hispanic was 8% while the proportion of homicides in this same group was 22%.

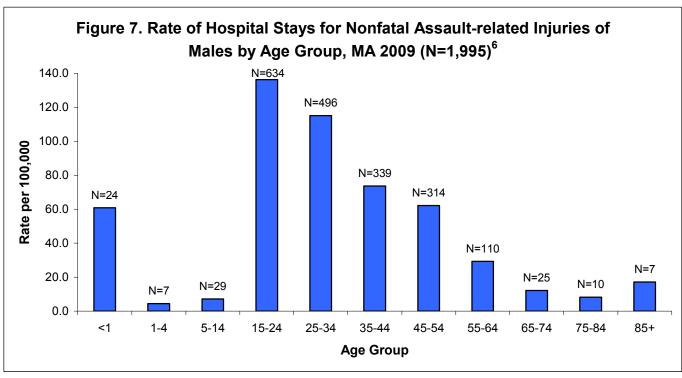
#### HOMICIDES BY SEX AND AGE GROUP



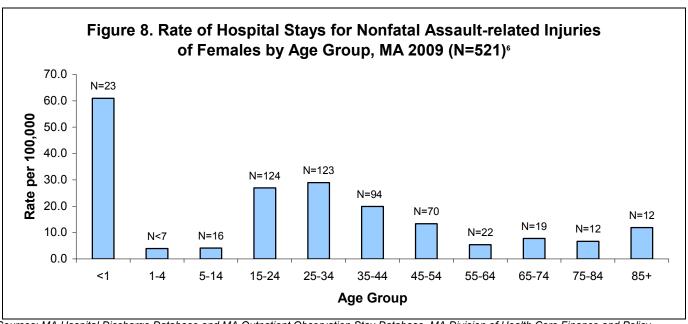
Source: Registry of Vital Records and Statistics, Massachusetts Department of Public Health.

- The number and rate of male homicides exceeded female homicides. In 2009, there were 131 male homicides (4.1/100,000) compared with 49 female homicides (1.4/100,000).
- Most homicides (66%) were of persons under the age of 35; 37% of all homicides were among victims ages 15-24.
- Among males (N=53, 11.4/100,000) and females (N=14, 3.0/100,000), the highest number and rate of homicides was among those 15-24 years old. There was an average annual increase of 4.1% per year from 1997 to 2009 among homicide rates for this age group.
- Among persons ages 25 to 34, the homicide rate increased an average of 2.2% per year from 2000 to 2009.
- Among ages 55 to 64, the homicide rate decreased an average of 6.0% per year from 1994 to 2009.

#### NONFATAL ASSAULT-RELATED HOSPITAL STAYS



Sources: MA Hospital Discharge Database and MA Outpatient Observation Stay Database, MA Division of Health Care Finance and Policy.



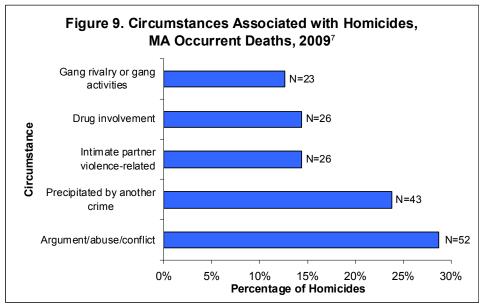
Sources: MA Hospital Discharge Database and MA Outpatient Observation Stay Database, MA Division of Health Care Finance and Policy.

NOTE: The above figures have different "Rate per 100,000" scales (y axis). This may make the rates for females appear larger than they actually are when compared to the chart for males.

- The overall rate of hospital stays for nonfatal assault-related injury among Massachusetts residents was 39.3/100,000 (N=2,516).
- The rate of nonfatal assault-related hospitalizations for males (62.2/100,000, N=1,995) was four times higher than the rate for females (15.4/100,000, N=521).
- Males had higher rates of hospitalizations for all age groups except for the <1 age group where rates were similar.
- Among males, the highest rate was in the 15-24 year age group (136.3/100,000, N=634).
- Among females, the highest rate was in the less than one year age group (61.0/100,000, N=23).

# HOMICIDE DATA FROM THE MASSACHUSETTS VIOLENT DEATH REPORTING SYSTEM (MAVDRS)

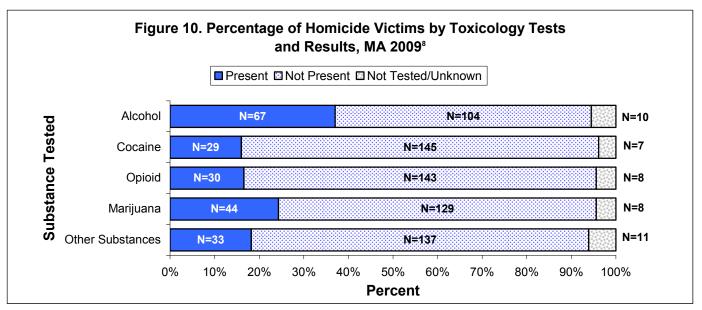
The Massachusetts Violent Death Reporting System (MAVDRS) is a surveillance system that collects detailed information on homicides, suicides, deaths of undetermined intent, and unintentional firearm deaths from medical examiners' files, police reports, and death certificates. Data is collected on all deaths occurring in Massachusetts, therefore numbers may differ from the data previously described from the Registry of Vital Records and Statistics.



In 2009, among all homicides:

- 29% had an argument, abuse or conflict noted (other than those related to intimate partner violence, gang activity, or jealousy, which are each coded separately).
- 24% were noted as being precipitated by another crime.
- 39% of female homicide victims were noted to have been intimate partner violence-related compared to 5% of male homicide victims.

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health.



Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health.

- 61% of homicide victims (N=104) that were tested for alcohol, cocaine, marijuana and opioids tested positive for one or more of these substances. For alcohol, only those who had a BAC over 0.04 were included.
- 39% of victims (N= 67) tested for alcohol were positive for alcohol; of these, 34% (N=23) had results of .04 or less, which may be due to decomposition rather than ingestion of alcohol.
- Approximately 25% of victims (N=44) who were tested for marijuana had positive results.
- 17% of victims (N=30) tested had positive results for opioids.
- 17% of victims (N=29) tested had positive results for cocaine.

### SUSPECT DATA FROM MAVDRS

A suspect, as defined in this bulletin, is a person(s) identified as such in a police report. Suspect information may be quite limited containing only sex, or approximate age, for example. A suspect may or may not be the person eventually arrested, tried, and convicted for the homicide. A suspect may also be one who kills one or more other people and then himself/herself. These data are often based on preliminary statements prior to completion of an investigation and adjudication.

Table 1. Suspects of Homicides: Number and Percent, MA 2009		
	N	Percent
Total Homicide Victims	181	100.0
With suspect information	140	77.3
With <b>no</b> suspect information	41	22.7
Suspect Demographics		
Sex		
Total suspects	170	100.0
Male	157	92.4
Female	7	4.1
Unknown Sex	6	3.5
Age Group		
Total suspects	170	100.0
Known Age	116	68.2
Unknown Age	54	31.8
Suspects with Known Age	116	100.0
0-14	0	0.0
15-24	53	45.7
25-34	29	25.0
35-44	10	8.6
45-54	13	11.2
55 and over	11	9.5

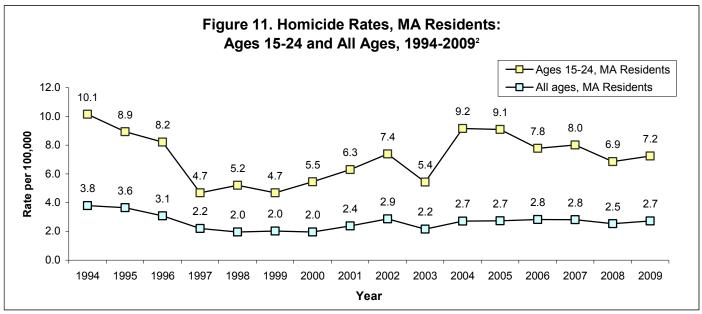
- Homicide incidents: Of the 170 incidents containing a homicide, 130 incidents had suspect information. 83% had only one suspect associated with it (N=108). Twenty-two incidents had more than one suspect (17%).
- Homicide victims: Information on suspect(s) was known for 77% of homicide victims (N=140).
- Most suspects were male (92%, N=157) and 4% were female (N=7). There were also six suspects whose gender was not known.
- Among the 116 identified suspects with known age, most (46%) were between the ages of 15-24 years, followed by age group 25-34 (25%). These two age groups accounted for 71% of suspects with information on age.

Source: Massachusetts Violent Death Reporting System, Massachusetts Department of Public Health.

There were 97 victims of homicides where the relationship between the victim to the primary suspect was known. In the majority of these cases (74%, N=72), the victim and suspect were known to each other (e.g. family member, intimate partner, friend, acquaintance, etc.). Of these identified suspects who were known to the victim:

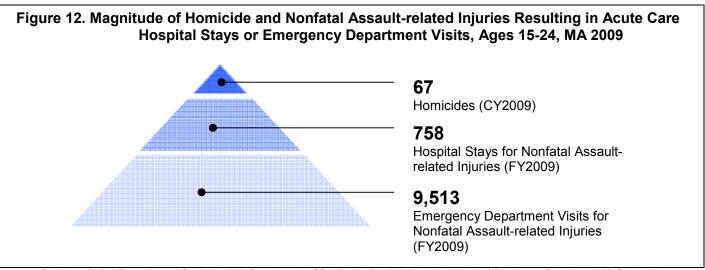
- 25% (N=18) of suspects were a current or former intimate partner of the victim.
- 19% (N=14) of suspects were a family member or caregiver of the victim.
- 56% (N=40) of suspects were someone else known to the victim.

## A CLOSER LOOK: HOMICIDES AND ASSAULT-RELATED INJURIES AMONG YOUTH AGES 15 TO 24 YEARS OLD



Source: Registry of Vital Records and Statistics, MA Department of Public Health.

- As noted in the previous section, youth ages 15 to 24 had the highest number and rate (N=67, 7.2/100,000 in 2009) of homicide among all age groups. (Note that crude rates were used for all ages).
- The total number of homicides among youth ages 15 to 24 from 1994-2009 was 1,010 for an annual average of 63 homicides per year.
- There was an average annual increase of 4.1% per year from 1997 to 2009 among homicide rates for victims ages 15 to 24.
- In 2009, male rates (N=53, 14.1/100,000) in this age group were over four times higher than female rates (N=14, 3.4/100,000).

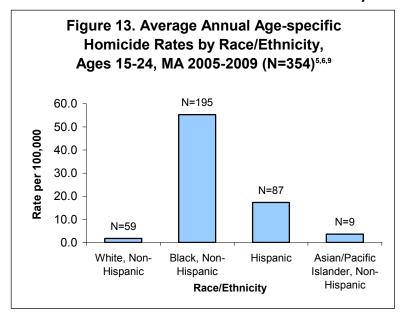


Sources: Registry of Vital Records and Statistics, MA Department of Public Health; MA Inpatient Hospital Discharge Database, MA Outpatient Observation Stay Database, and MA Emergency Department Discharge Database, MA Division of Health Care Finance and Policy.

## IN 2009, YOUTH AGES 15-24 COMPRISED:

- 37% of the total homicides (67 of 180).
- 30% of the total hospital stays (758 of 2,516).
- 38% of the total emergency department visits (9,513 of 25,260).

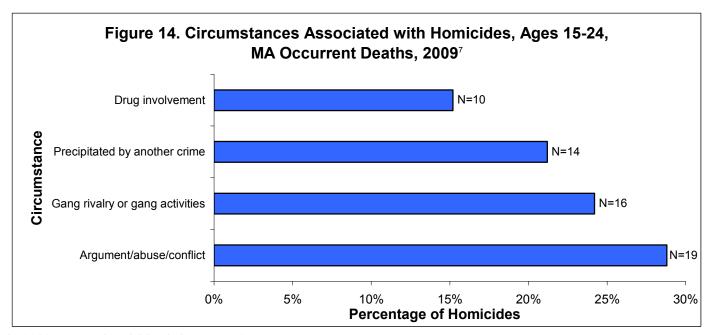
## YOUTH HOMICIDE RATES BY RACE/ETHNICITY



- There were a total of 354 homicides of Massachusetts residents ages 15 to 24 from 2005-2009 for an average annual rate of 7.8/100,000.
- The rate for Black, non-Hispanic residents ages 15-24 (55.3/100,000, N=195) was statistically significantly higher compared to all other races/ethnicities and was about 33 times higher than the rate of White, non-Hispanics (1.7/100,000). The proportion of the MA population ages 15-24 that was Black, non-Hispanic was 8% while the proportion of homicides that were Black, non-Hispanic was 55%.
- The rate for Hispanic residents ages 15-24
   (17.3/100,000, N=87) was statistically significantly higher than White, non-Hispanics (1.7/100,000, N=59) and Asian, non-Hispanics. (3.6/100,000, N=9). This was about 10 times higher than the rate for White, non-Hispanics. The proportion of the MA population ages 15-24 that was Hispanic was 11% while the proportion of homicides in this same group was 25%.

# YOUTH HOMICIDE CIRCUMSTANCE DATA FROM THE MASSACHUSETTS VIOLENT DEATH REPORTING SYSTEM (MAVDRS)

The Massachusetts Violent Death Reporting System (MAVDRS) is a surveillance system that collects detailed information on homicides, suicides, deaths of undetermined intent, and unintentional firearm deaths from medical examiners' files, police reports, and death certificates. Data is collected on all Massachusetts occurrent deaths (deaths occurring in Massachusetts), therefore numbers may differ from the death data previously described.



In 2009, among homicide victims ages 15 to 24:

- 29% had an argument, abuse or conflict noted (other than those related to intimate partner violence, jealousy, or gang activity, which are each coded separately). This was the most often noted circumstance of this age group.
- 24% were noted as being related to gang rivalry or gang activities.
- 21% were precipitated by another crime.

#### **Endnotes**

- 1. Figure 1: Rates are age-adjusted using the Standard US Census 2000 population.
- 2. Figures 1 and 11: The terrorism deaths of September 11, 2001 are excluded in the US and MA rates.
- 3. Figure 4: One case of nonfatal assault-related hospital stays had an unknown external cause of injury, which is excluded from the total.
- 4. Figure 5: Rates are age-adjusted using the Standard US Census 2000 population. The five most recent years of data were used to improve the stability of the rates. N's presented on the graph represent the five year total.
- 5. Figures 5 and 13, Bullets 2 and 3: Statistically significant at the  $p \le .05$  level. Please refer to the Methods section (next page) for an explanation on statistical significance.
- 6. Figures 6, 7, 8, 13: Rates are not calculated on counts less than five and are unstable on counts less than 20.
- 7. Figures 9 and 14: NVDRS allows for the endorsement of more than one circumstance for a homicide victim. It is also important to note that some circumstances are more likely to be known and/or noted than others.
- 8. Figure 10: The discussion of toxicology results in the text describes the percent of positive results based on victims tested, while the chart depicts the percent of positive results based on the total number of victims. These percents may differ slightly.
- 9. Figure 13: Average annual age-specific rates were calculated using the five most recent years of data to improve the stability of the rates. N's presented on the graph represent the five year total.

#### **Data Sources**

- Statewide Acute-care Hospital Stays: Massachusetts Inpatient Hospital Discharge Database, MA Division of Health Care Finance and Policy and Massachusetts Outpatient Observation Stay Database, MA Division of Health Care Finance and Policy. Data reported are for fiscal year (FY) 2009 which runs from October 1, 2008 -September 30, 2009. This data includes Massachusetts residents admitted and released from a Massachusetts acute care hospital. For inpatient hospital discharges, deaths occurring during the hospital stay and transfers to another acute care facility were excluded from the counts presented. For outpatient observation stays, cases subsequently dying in the hospital are excluded from this analysis. All discharge diagnoses were analyzed to ascertain injury.
- Statewide Emergency Department Discharges at Acute Care Hospitals: Massachusetts Emergency Department Discharge Database, MA Division of Health Care Finance and Policy. Data reported are for fiscal years (FY) October 1 -September 30. This data includes Massachusetts residents treated and discharged from an emergency department of a Massachusetts acute care hospital. Deaths occurring during treatment or those admitted to the hospital were excluded from the counts presented. All discharge diagnoses were analyzed to ascertain injury.
- Population Data Estimates were obtained from the National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2009, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2009). Prepared under a collaborative arrangement with the U.S. Census Bureau; released June 20, 2010. Available from: <a href="http://www.cdc.gov/nchs/nvss/bridged\_race.htm">http://www.cdc.gov/nchs/nvss/bridged\_race.htm</a> as of July 23, 2010.
- National Data: Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS), Accessed 11/24/11. Available from: <a href="www.cdc.gov/ncipc/wisqars">www.cdc.gov/ncipc/wisqars</a>, calendar year (CY), U.S Residents.
- Massachusetts Violent Death Reporting System (MAVDRS): Injury Surveillance Program, Massachusetts Department of Public Health, calendar year (CY) 2009. Data includes all deaths occurring in Massachusetts, regardless of residency.
- Death Data: Registry of Vital Statistics and Information, Massachusetts Department of Public Health, calendar year (CY) 2009. Data reported include all Massachusetts residents, including those who died out of state.

## **Acknowledgements**

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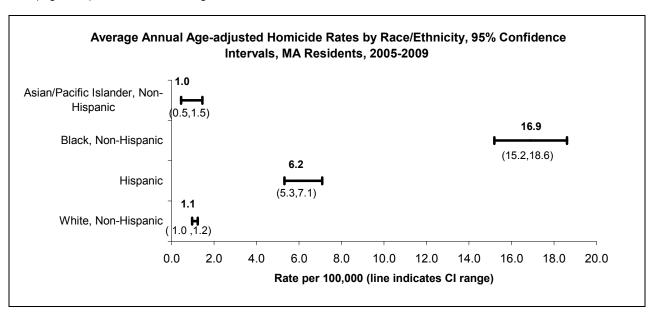
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### **Methods**

**General Notes:** All homicides and assault-related injuries were ascertained using guidelines recommended by the Centers for Disease Control and Prevention and are based upon the International Classification of Disease codes for morbidity and mortality. All rates reported in this bulletin are crude rates except for Figures 1 and 5. Age-adjusted rates are used to minimize distortions that may occur by differences in age distribution among compared groups.

**Statistical Significance:** A result that is statistically significant is one that is *unlikely* to have occurred by chance alone, and is therefore, *likely* to represent a true relationship between a risk factor such as race, age, or sex and a disease or injury of interest. The confidence interval (CI) is a measure of uncertainty for a given value. It calculates a range with a higher and lower value assigned to a numeric statistical value, such as rate. As a general rule, the CI means that we can be 95% certain that the *"true"* value (e.g., rate) falls within this range.



Statistical significance is influenced in part by the number of cases (N). Typically, a small N provides a large confidence interval (CI) and a large N provides a small CI. If the CI range of one group does not overlap with another group, then the difference in rates for those two groups *is* statistically significant. Where the CI does overlap, the rates are not statistically significant. In the figure above Black, non-Hispanics have a rate of 16.9 per 100,000 and the CI is 15.2 – 18.6/100,000. The CI range for Black, non-Hispanics *does not* overlap with the CI ranges for Asian/Pacific Islander, non-Hispanics, and White, non-Hispanics and is therefore statistically significantly higher than those groups. The CI range for White, non-Hispanics (1.0-1.2) overlaps with Asian/Pacific Islander, non-Hispanics (0.5-1.5) and is therefore *not* statistically higher than that group. Statistical significance however does not necessarily imply importance and should not be the only consideration when exploring an issue. Because a rate is not "statistically" significant does not mean there is not a real problem that could or should be addressed.

#### Resources

For more information on homicide and assault-related injury data or to learn more about violence prevention activities in Massachusetts, please contact:

#### **Injury Surveillance Program**

Bureau of Health Information, Statistics, Research, and Evaluation

Massachusetts Department of Public Health 250 Washington Street, 6<sup>th</sup> Floor

Boston, MA 02108

Phone: (617) 624 - 5648 (*General Injury*) Phone: (617) 624 - 5664 (*MAVDRS*)

http://www.mass.gov/dph/isp

#### **Violence Prevention and Intervention Services**

Bureau of Community Health Access and Promotion Massachusetts Department of Public Health 250 Washington Street, 4<sup>th</sup> Floor Boston, MA 02108

Phone: (617) 624 - 5463

http://www.mass.gov/dph/violence